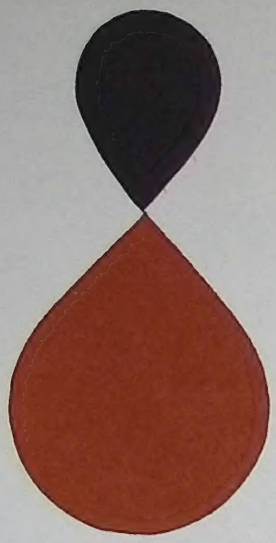
ROGERS BOOSTER

FALL 1962



EDITORIAL

Everybody who hasn't been hiding in the underbrush lately knows that, thanks to the advent of Telstar, television transmissions are now being beamed from this continent to Europe. We mention the fact at the start of this piece, because it's important news for everybody engaged in the electronics industry.

Now, at first, it may not seem like important news to the television service man: it won't alter in any way his function of keeping Canada's TV sets in good running order. Nor will it have any effect on the dealer's procedure in selling new TV sets.

But if you think about the Telstar achievement, it gives rise to a startling revelation. The electronics industry is progressing by leaps and bounds—even by bounds into outer space. Where is it likely to leap next?

That's a hard question to answer directly. But here's one answer which will give those of us engaged in the industry something to think about: It may leap in a direction which will require the service man to leap and bound right after it, unless he wants to get left behind among the antiques.

One possibility immediately comes to mind: color television. True, the Board of Broadcast Governors sounds pretty discouraging these days about the possibility of Canada's having color TV in the near future. But the BBG has been known to change its mind before now; and there are those mystery organizations called "pressure groups" working hard to promote the color medium.

Would the average TV service man be ready to extend his range, to give complete service to his customers who had acquired color TV sets? The answer is: NO. Would he have sufficient equipment to offer the new service? NO. Would he be sufficiently practised in the repairing of color sets to approach a problem confidently? NO.

And the final advent of color TV is certain to be too big, and too profitable an area for any one worthy of the name of businessman to say: "It's a pain in the neck—let some other Joe look after those headaches." The number of hours that Canadians are spending before their TV sets is growing steadily; when those hours are "in living color"—watch them increase again!

So, we suggest, it's time to get ready for color TV and its problems. And we admit that it's not an easy preparation. The ambitious service man will have to spend money to prepare for color TV; but spending money, in this sense, is an investment. It is an investment in service to the community; and the community rewards those who serve it well.

What will the service man need to study this new facet of his work? As we mentioned, he will need more equipment. But even after he gets new equipment, he will have nothing to practise on. And that means that he must acquire a color TV chassis.

With a used color set (he may be able to get one in the United States; certainly not here) and a color bar generator—or almost anything that will produce a color pattern—he is in business. Or rather, he has the necessities to learn the job that will put him in business, when color television becomes an actuality in Canada.

Sure, he'll have spent money to do so. But doctors spend money, plenty of it, to learn how to remove an appendix. Like the doctor, the service man who strives to keep up with, or ahead of, what's required of him is fulfilling his function to the fullest. Without that striving, he's a quack.

Service technician

saint or sinner?

Back in the late autumn of 1959, Pierre Berton, noted Toronto *Star* columnist, wrote a series of articles on TV technicians that fluttered the oscilloscopes from one end of the city to the other.

Here, in print, were actual cases where service technicians were caught with their parts down, in what had to be either blundering mistakes or complete dishonesty.

The articles had to do only with service organizations offering service calls at bargain prices—under $3.00. The servicemen were asked to repair a set that was known to be in perfect condition except for "planted" faults created by competent technicians.

Of 11 servicemen called, Mr. Berton pointed out, just three did only what was required efficiently and speedily. And repairmen were paid a total of $134.05 for what should have been a total of $46.00 worth of work.

Mr. Berton's articles pointed up a sad fact. But it was not a fact that reputable service technicians were not aware of. The fact is that television repair men have a tough fight ahead in the field of public relations. This is partly because of general ignorance on the part of the public as to the intricacies of modern television sets, and partly due to the few repairmen who exploit this ignorance either by bad service or dishonesty.

Let's forget, for a moment, all that we know about the internal workings of television receivers. In other words pretend we are the average TV owner.

It's Saturday morning and the kids are in the house because it's raining. Ah! Turn on the TV and keep the kids amused.

But no such luck. The picture fades. So we call the local TV technician. He comes as quickly as possible and looks in the back of the set. In a few minutes he has replaced a few weak tubes, presented his bill (which is always received with some grumbling), and gone his way.

All is fine until next Monday afternoon when Mother, weary from the day's washing, turns on the television for a short rest. Then it happens. The picture fades again.

The repairman is called once more, this time in anger. He arrives and immediately his competence is questioned. After a check he reports that a new rectifier is required. He can only assume that the two faults occurred independently. Generally, he cannot make you, the average TV owner understand this. He will likely collect his bill for parts but you, not knowing anything about your receiver, will balk at paying the cost of another service call. To you, all that happened was that the picture faded again after you had already paid to have it fixed.

Your neighbours' opinions and the unfavourable publicity given to dishonest or sloppy servicemen have pre-conditioned you to suspect the technician who has repaired your set.

Now, as a technician, do you see the problem *your customers* can have. They honestly don't know what you're doing. And through ignorance they are naturally suspicious.

Another thing that confuses the public is the difference in service call charges. The writer of this article questioned a number of technicians

continued over

and found very mixed opinions. Some insisted that a charge of up to $4.75 is not only justified, but is practically giving away service. Especially when a call takes you right across the city. Others were completely happy with $2.50 per service call, saying that the mark up on parts and legitimate labor charges more than cover the cost of doing business in the long run.

With the diversity of prices for service calls that prevails, is it any wonder that customers question the prices charged by technicians?

Now let's look at the technician's side of the story.

We interviewed quite a few TV service organizations to get their opinions on this problem. All of them were well aware of the general suspicion in which they are held by the public. But happily, all of them could claim a steady clientele that had grown to trust them.

The following are a few typical examples of opinion.

The service manager of a large TV and general electronics repair firm claimed the TV service caused so many headaches that his company was trying to get other types of repair business and steer away from the accent on TV repairs.

The reason for this, he said, is that customers in general want more than service. They seem to want a miracle. They resent the set being taken out of their house which he feels is unfair. They are too often abusive when they have something go wrong within a few weeks of previous repairs. And you can tell many distrust you.

All this, he said, tends to make servicemen disinterested. They, in turn, get to dislike their customers and their work shows it. He feels this is largely an emotional conflict, not deliberately poor work. In some cases, he reported, his servicemen got ulcers from the strain.

Similarly, the service manager of a downtown radio and TV sales and service organization felt that it wasn't worth trying to get TV repair business. However, what he gets is profitable because he does a first-rate job. Most of his business has to do with hi-fi equipment and the TV repairs he does are mostly related to hi-fi systems. To go into the TV repair business in a big way, he felt it is necessary to give service away.

In contrast to this are the technicians who go into the business in a big way, love it and advertise for more.

One such service technician told the writer that he thinks it is only human nature to distrust a TV serviceman after all the bad publicity some have stirred up. But he said that after you do a good job at a good price and explain things reasonably to customers they tend to lose their hostility.

This particular technician feels that there are too many dishonest servicemen still in business and that they will go on causing grief to legitimate companies as long as they are allowed to remain. He does not find it necessary to charge more than $2.50 for a service call because the low price brings him lots of "first time" customers who like his work and become regular customers.

He thinks a little education of the public and getting rid of the undesirable servicemen would do a lot to make business for all technicians a lot easier. But he still likes the business and spends about $4,000 a year in advertising to get *more* business.

This article is intended to draw no other conclusions than that many servicemen are unhappy and most agree that a big public relations job is needed to make the TV service technician trusted and happier in his work.

This job is being done, but is it being done fast enough? What do your servicemen do to improve the image of their trade? Do they take time to explain what they are doing and why? Can the service technicians do this job themselves or do they need the help of the manufacturers? Should servicemen have a national organization to protect their reputation?

We would like to hear your opinions on this subject. We hope this article has provoked some thought and if it has, write us and tell us what you think. And watch for the next copy of *The Booster*. In it will be definite news of a step towards rectifying the big problem of customer ignorance.

Soldering Tip for Printed Circuit Work

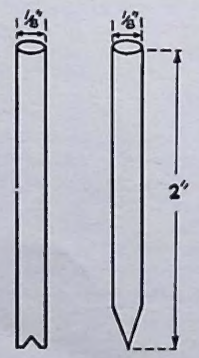
Prizewinning suggestion for this month

For safer work on printed circuits, file a 110 volt, 10 watt soldering iron tip as shown in the illustration with a three-cornered file. Putting this tip on a condenser or resistor, you will be able to lift it safely with a penknife, and still have a good board.

When soldering a resistor or condenser back, lay the end flat on the board. Then you will heat the resistor and printed circuit at the same time and do no damage to the board.

To avoid too much solder on the board, flatten your solder with a pair of long nose pliers. It works wonders.

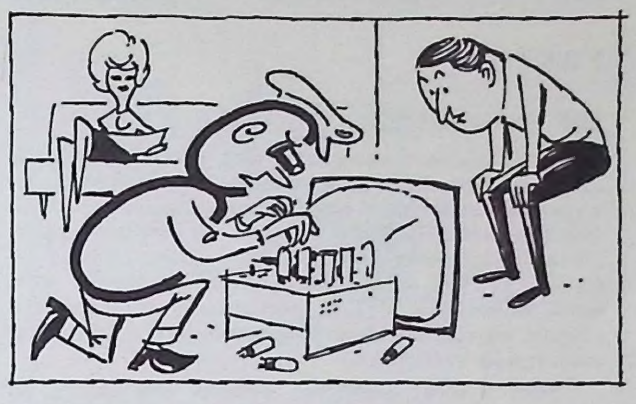
W. J. GATES, *Montreal*



Cathode Charlie

saves the day and makes a friend

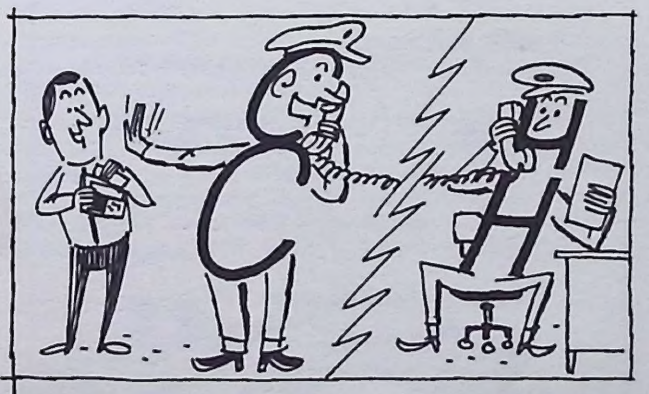
■ Charlie, come quick! My picture's shrunk and I've just got to see the fight tonight. Please do something.



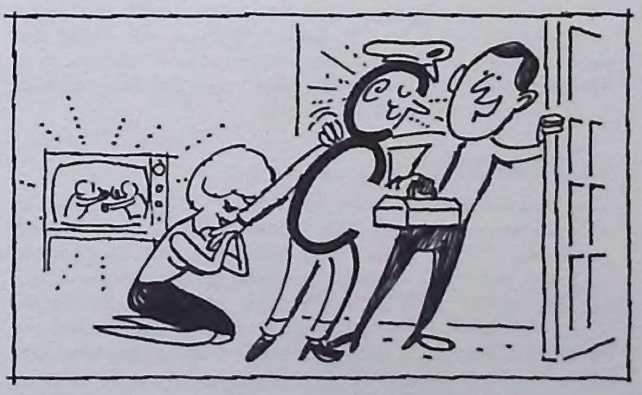
■ Hmm. Looks like a resistor's gone. Let me see. Yeah, sure enough. It'll only take me a few minutes and it'll be good as new.

■ Bills. Bills. Bills. Always something going wrong with that set. Can't you fix it and make it stay fixed. I'm not made of money.

■ Well, considering how much you use your TV, I think it costs you very little. But in this case I think I can save you a little money.



■ I'll call the shop. Hello Harry. Didn't we replace an XYZ resistor in Mr. McConkle's TV set last month. We did? O.K., thanks. That'll save him the cost of the part because it's on a 90 day warranty.



■ Gee, thanks Charlie. I never would have remembered. Now I don't have to worry about that bill. And from now on I'll trust you with all my service problems.

And the moral of this story is that the TV repairman who takes care of his customers gets taken care of himself. Satisfied customers come back for more and they often recommend you to friends. Build the confidence of every one of your customers. You'll do yourself a service.

SERVICING GRS-BAND TRANSCEIVERS

PART 2

THE TRANSMITTER

Most of these transmitters are relatively simple although occasionally a complex neutralization or impedence-matching circuit may be encountered. For the technician who has had no previous experience with transmitters and who wishes to read up on the subject, the ARRL handbook would be a good investment. It is particularly good on the subject of transmitters in general and modulation patterns in particular.

Three typical oscillator circuits are shown in Figure 1 where A is the grounded-emitter Pierce circuit, B the grounded-base, collector-emitter feedback and C the grounded-base Colpitts. These are the basic circuits and in practice a modulation transformer will be found connected in place of the 100-ohm resistor in the —9-volt supply.

Ordinarily transmitter aligning is not necessary unless a channel has to be changed. If, for example, a change is to be made from channel 2 to channel 20, repeaking of the oscillator and final tank will be necessary.

If the transmitter output has fallen off due to misalignment, the field strength meter should be placed about 18 inches from the set and the final tank slug or capacitor adjusted with a non-metallic screwdriver until the field strength meter reads maximum. If the set uses an antenna-loading coil, this should be touched up after tuning the tank.

After the tune-up is completed, the input to the final stage must not exceed 100 milliwatts and, if it exceeds this, the final tank should be detuned until this requirement is met. One naturally dislikes to cut down on available power output but the rules must be adhered to. If detuning does not bring the power down to the required value, other means may be used such as increasing the value of the resistor in the oscillator emitter circuit.

MODULATION

The waveforms shown in Figure 2 will assist in determining whether the transmitter is modulating properly. To obtain these patterns one horizontal and one vertical deflection plate in the scope CRT are grounded as is also the case of the transmitter. The other horizontal plate connects to the secondary of the modulation transformer and the other vertical plate has an insulated wire connected to it that is wrapped loosely around the antenna. When the scope is fed only r.f. and sweep is applied to the horizontal plates, the modulation envelope can be seen clearly. (a) shows 100% modulation, (b) 60%

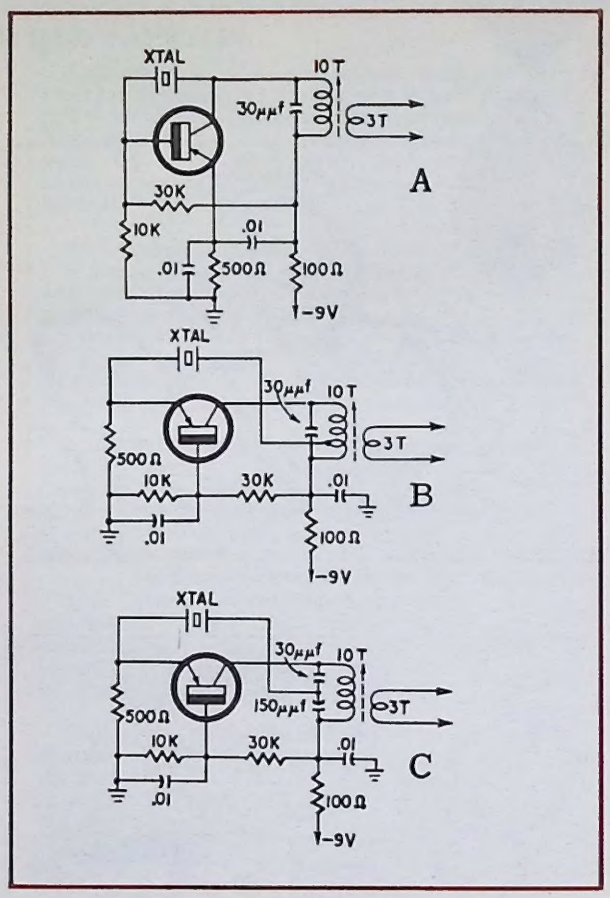


FIG. 1

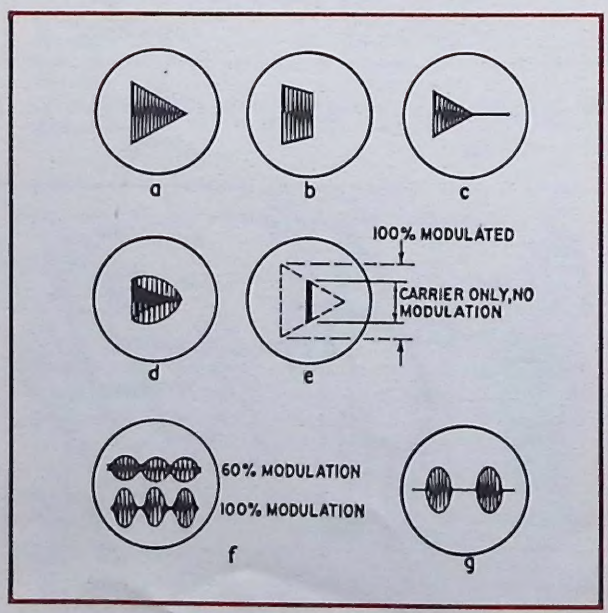


FIG. 2

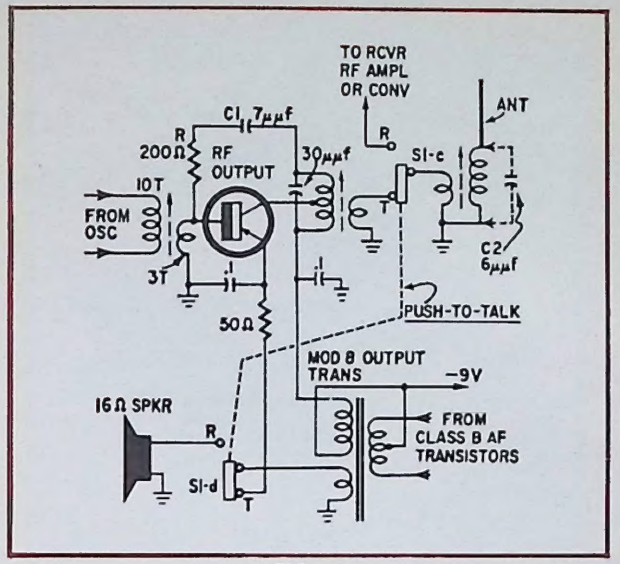


FIG. 3

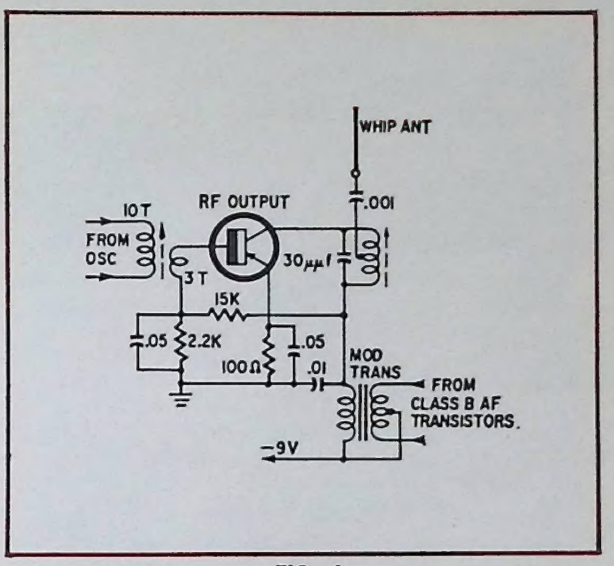


FIG. 4

modulation, (c) overmodulation, (d) phase shift in audio, (e) carrier only. (f) shows undistorted waveforms of (a) and (b) using horizontal oscillator to scope CRT and (g) shows overmodulation of about 200%.

With this system for observing modulation in operation, whistle into the microphone and note the pattern on the scope. This should be a sharply defined triangle running in a horizontal direction. If it looks like a pyramid with its top cut off, the modulation is not 100%. On the other hand, if it is a triangle with a horizontal line spreading outward from its point, the modulation may be excessive. The other possibility is illustrated in (d) in Figure 2.

Overmodulation is a serious defect and must be avoided even in transmitters of extremely low power output. Two typical output stages are shown in Figures 3 and 4. In Figure 3, R and C1 are required to prevent parasitic oscillation while C2 is a stray capacitance. The circuit of Figure 4 is simpler but is susceptible to parasitic oscillation and frequency drift with temperature change.

To return to the subject of overmodulation, if difficulty is experienced in reducing the gain of the modulator, a resistor may be connected in series with the microphone line to the modulator driver. The correct value will have to be determined by experiment and 100 ohms is a good starting point.

FINAL CHECK

Having completed the foregoing tests and adjustments, double check for anything that may have been overlooked. See that the field strength does not fall off when the metal case is closed and then test both receiver and transmitter over a range of at least a few hundred yards.

TYPICAL FAULTS

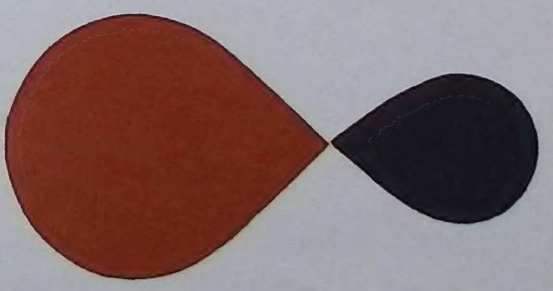
We will conclude with an outline of typical faults similar to last month's list for the receiver section. In the items that follow we are assuming that the receiver is functioning normally and only the transmitter is at fault:

■ Transmitter dead—Push-talk switch damaged. Loose crystal or oscillator tuning slug fallen out. Antenna shorted or lead broken.

■ Transmitter emits only carrier, no modulation—Microphone lead loose. Push-talk switch damaged. Switch not being depressed far enough.

■ Audio output scratchy and background noise—Loose crystal. Open bias resistor or emitter resistor in oscillator. Bypass capacitor changed in value.

■ Weak transmitter output—Antenna shorted. Battery weak. Antenna not fully extended. Set turned too far from vertical position.



what's NEW !

Rectangular Bulb for Colour TV

Corning Glass is promising a rectangular, hard-glass colour bulb for next year. So far only round, 70 degree bulbs are available in the glass quality required for colour picture tubes.

The industry response to Corning's announcement is more or less "wait and see."

Television Digest—July 30

Dictating "Network"

International Business Machines Corp. announced a new dictating system that operates on a "network" system for a number of persons.

Each user is linked to a central recording unit by a small microphone. The number of microphone links is unlimited. However, only one person at a time can dictate. As long as one person is dictating a "busy" bulb lights up on all other microphones.

The system allows playback and correction.

The Wall Street Journal—July 18

Transistor Radio Price War

The latest news from the price war in the transistor radio field are reports from Independent Housewares Show. Some importers were offering six-transistor radios for as low as $7.00 at wholesale (made in Hong Kong). The level of $7.60 to $7.75 was more common and some large importers were trying to hold the line at $8.75.

Electrical Merchandising Week—July 16

Philips and Siemens Merge Subsidiaries

Two major European phonograph record manufacturers have joined forces to increase their strength in the world markets. They have agreed upon a fifty percent stock exchange.

The two companies are "Deutsche Grammophon" and "Philips Phonographische Industrie." The former is a subsidiary of Siemens and Halske, a German giant in electrical apparatus and supplies, the latter is a subsidiary of Philips, Eindhoven.

Home Furnishings Daily—July 17

Price Change Indicator

Is it worth it to cut prices to get more volume? Find out exactly what increase in volume is necessary to compensate for a given decrease in price with the *Price Change Indicator*, available without charge from Philips. Why not write for one.

WHY DON'T YOU?

■ Have your Yellow Pages advertisement reprinted on one side of a card and leave the other side for a service record. Attach a card to the back of each set you repair leaving a ready reference for your phone number plus a record of parts replaced. Then if any part has to be replaced within its 90-day warranty period, you have a handy record. This will save your customer the cost of the part and he'll remember you for your good service.

■ Cut the cost of tubes by careful buying. The cumulative effect of the change in value of the Canadian dollar plus the Government surcharge on imports, has increased the price of some of the imported tubes sold by several Canadian manufacturers. It pays to check out your price lists carefully before ordering tubes.

■ Call on the local business people in your area and offer your services. An increasing number of companies are using audio, video or other circuitry equipment.

■ Ask local gasoline service stations for referrals for car radio repairs. Service station operators get to know their customers' troubles pretty well and are not equipped to handle radio repairs. Small new car dealers are also good prospects for car radio service work. Offer them a small commission on business referred to you.

■ Write to us at *The Booster*, and let us know about service hints or promotion methods *you* have found effective. If the editors find them suitable for publication, you'll receive $5.00! Our latest $5.00 winner is published on Page 4.

Or send us the beefs you'd like to have aired in front of the manufacturers . . . naturally, we don't pay for these.

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